The Prevalence of Diabetes Mellitus and the Effected Factors in Adult Population of Ulas Town[11]

ULAŞ İLÇESİ ERİŞKİN NÜFUSTA DİABETES MELLITUS PREVALANSI VE ETKİLEYEN FAKTÖRLER

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Summary

Our study included 400 cases randomly sampled from a population aged over 20, living in the county of Ulas, a rural area in Sivas. Subjects had blood drawn into tubes after completion of a questionaire and the blood samples were analysed at laboratory of Biochemistiy in Hospital of Faculty of Medicine in Cumhuriyet University.

As a result of this study, the prevalence of diabetes mellitus was found to be 5.3% . Age, family histoiy of diabetes mellitus, hypertension and obesity were found to affect the prevalence of diabetes mellitus ($p<0.05$).

Keywords: Diabetes mellitus, prevalence

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Özet

Bu çalışma kırsal bir bölge olan Ulaş ilçesindeki 20 yaş üzeri nüfustan basit rastgele örnekleme yöntemi ile seçilen 400 kişide uygulandı. Bu kişilere anket uygulandı ve alınan kan örnekleri Cumhuriyet Üniversitesi Tıp Fakültesi Biyokimya Laboratuvarı'nda değerlendirildi.

Çalışma sonucunda diabetes mellitus prevalansı %5.3 olarak tespit edildi. Yaş, ailede diabet öyküsü, hipertansiyon ve obezitenin diabetes mellitus prevalansını etkilediği saptandı ($p< 0.05$).

Anahtar Kelimeler: Diabetes mellitus, prevalans

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Diabetes mellitus has an important place in chronic diseases. In pathogenesis of diabetes mellitus factors like age, gender, heredity, hypertension and obesity have important roles, especially in non-insulin dependent type which is seen more frequently (1, 2). In the world about 200 million people are estimated to have diabetes mellitus. In a study that was made by World Health Organization (WHO), the prevalence of diabetes mellitus was found to be 2.5% to 7.1% globally, changing according to age and sex (3). King and et al reported that the prevalence of diabetes in adults worldwide was estimated to be 4.0% in 1995 and will rise to 5.4% by the year 2025 (4). There is not enough knowledge about the prevalence of type 2 diabetes mellitus in Turkey. Kelestimur and et al. reported that the total glucose intolerance was 15.9% in Kayseri (5). The aim of the study was to investigate the prevalence of diabetes mellitus and the factors affecting it in Ulas which is a rural area. With similar studies held in different provinces of Turkey we could contribute to increase our knowledge about diabetes mellitus prevalence in our country.

Material and Methods

Among 1603 subjects aged over 20 years living in Ulas, 472 ($t= 2.59$, $p= 0.10$, $d= 0.03$) were selected by simple random sampling method, 400 (84.7%) of them were included in the study because of being unwilling to participate to the study or not being at home at the time of the study. These subjects were evaluated according to their blood glucose levels. While 932 (58.1%) of the population were females, 671 (41.9%) were males. Because of males' working in the city center or the other cities, the distribution of age and sex in sampling group represents the population. After 12 hours overnight fasting, blood samples were drawn for determination of glucose levels, and a

questionnaire were given in order to determine sociodemographic characteristics. The collected blood specimens were analysed by an autoanalyser (BM/Hitachi 911) using a commercial kit (Boehringer Mannheim, Germany) in Biochemistry Laboratory of Medical Faculty of Cumhuriyet University. An oral glucose tolerance test (OGTT) was conducted according to the WHO criteria (6). The subjects having the fasting blood glucose levels of 100 mg/dl, 100-119 mg/dl and over 120 mg/dl were accepted as normal, suspected and diabetic, respectively. Because of high economical cost and the distance of Ulaş from the city center about 45 kilometers, OGTT was performed only on the people having suspected diabetes mellitus. At least 200 mg/dl of the blood glucose levels in the second hour of OGTT were accepted as diabetic.

All statistical analyses were performed using S-Plus software (Mathsoft, Inc., Seattle, Washington). Diabetes mellitus prevalences according to the risk factors were estimated by chi-square test and analysis of regression. Statistical significance was assumed for p values O.05.

Table 1. Sociodemographic characteristics of the subjects (n= 400)

	Number of cases	%
Age Groups		
20-29	73	18.3
30-39	111	27.8
40-49	80	20.0
50-59	61	15.3
60+	73	18.3
Gender		
Male	147	36.8
Female	253	63.2
Educational status		
Illiterate	170	42.5
Primary school	139	34.7
Secondaiy school and higher	91	22.8
Marital status		
Married	337	84.3
Single	35	8.7
Divorced	28	7.0
Occupation		
Housewife	239	59.8
Worker	50	12.5
Officer	37	9.3
Farmer	29	7.2
Miscellaneous	45	11.2

Results

The sociodemographic characteristics of entire population in this study were shown in Table 1. As seen in Table 1, 63.2% of the subjects were female and 36.8% were male. Looking at the age groups it can be noticed that the largest group was 30-39 (27.8%) years of age group. According to educational status the subjects constituting the largest group were illiterate (42.5%). In addition 83.3% of the subjects were married and 59.8% were housewives.

The prevalence of diabetes mellitus was found to be 5.3%. Table 2 shows the prevalence of diabetes mellitus according to risk factors. In subjects 60 years of age and older, the prevalence of diabetes mellitus was 16.0% and this was significantly higher than the other age groups (pO.01). Gender was not associated with diabetes mellitus prevalence (p >0.05) but among divorced subjects diabetes mellitus was more prevalent (14.3%) than married or single subjects (p< 0.05). In subjects with and without family history of diabetes mellitus the prevalences were 12.2% and 3.5%, respectively (p< 0.01). The prevalence of diabetes mellitus was found to be increased correlated with number of gestations but this increment was not statistically significant (p>0.05). The prevalences of diabetes mellitus in subjects who had a body mass index lower than 24.9, between 25.0-29.9 and of 30.0 or greater were 1.3%, 7.3% and 8.8%, respectively. Prevalence of diabetes mellitus in subjects with a body mass index of 25.0 and greater were significantly higher than the others (p< 0.05). In subjects with systolic and diastolic hypertension the prevalences were 15.7% and 13.4%, respectively. These values are significantly higher than normotensives (p <0.01). In the analysis of regression statistical difference was found between diabetes mellitus and age, body mass index and systolic and diastolic blood pressure (p <0.01).

Table 2. Diabetes mellitus prevalence according to risk factors

	DM (-)		DM (+)		Test
	Number of cases	%	Number of cases	%	Result
Age Groups					
20-29	73	100.0	-	-	
30-39	109	98.2	2	1.8	X^2= 24.69
40-49	77	96.3	3	3.8	P<0.01
50-59	57	93.4	4	6.6	
* 60+	63	84.0	12	16.0	
Gender					
Male	136	92.5	11	7.5	X^2=2.33
Female	243	96.0	10	4.0	P> 0.05
Marital Status					
Married	320	95.0	17	5.0	X^2=6.56
Single	35	100.0			P< 0.05
Divorced	24	85.7	4	14.3	
Family History of Diabetes Mellitus					
Positive	72	87.8	10	12.2	X^2= 10.00
Negative	307	96.5	11	3.5	P<0.01
BM1					
* 20.0-24.9	156	98.7	2	1.3	X^2=8.59
25.0-29.9	14	92.7	11	7.3	P< 0.05
30.0+	83	91.2	8	8.8	
Systolic Blood Pressure					
0-159	320	97.2	10	3.0	X^2= 18.68
160+	59	84.3	11	15.7	P< 0.01
Diastolic Blood Pressure					
0-94	321	96.4	12	3.6	t= 10.80
95+	58	86.6	9	13.4	P< 0.01
Total		04 7	? 1	S 1	

* Statistically significant

Discussion

Since many years WHO deals with diabetes mellitus, a disease which results high costs and causes a variety of complications. WHO supports studies of diabetes mellitus and tries to diminish lack of knowledge about it (7). Also in our country data related to diabetes mellitus is fairly limited. Particularly area studies are low in number.

In the present study the prevalence of diabetes mellitus was found to be 5.3%. In studies held in rural areas Bagriacik (8), Öztürk et al. (9), Oker et al. (10), Telatar et al. (11) and Beköz et al. (12) had reported the prevalences 1.0%, 1.7%, 1.5%, 6.0% and 6.8%, respectively. In urban areas Ucku et al. (13), Sezer et al. (14) and Qetin et al. (15) had reported the prevalences 4.5%, 6.3% and 6.9%, respectively. The results of our study are in accordance with data published recently. The low prevalences reported in earlier studies may be due to utilization of glucosuric screening tests which have fairly low sensitivity (16).

This study demonstrated a significantly high prevalence of diabetes mellitus especially in the population of age of 60 years and older (16.0%). These results are comperable to the findings of Öztürk et al (9), Uçku et al. (13), Çetin et al. (15) and Sezer et al. (14) , who reported an increase in prevalence of diabetes mellitus above age of 50. Also in worldwide studies correlation between age and diabetes mellitus prevalence were demonstrated (17, 18). Studies about this subject has shown development of glucose intolerance with increasing age (19).

In this study no association between gender and diabetes mellitus were found. This result was also concordant with findings of Çetin (15) and

Uçku et al. (13). The published results of studies in different countries demonstrated effectiveness of risk factors other than age on diabetes mellitus prevalence (17).

Family history is also defined as a risk for diabetes mellitus. In this study the prevalence of diabetes mellitus was 12.2% in case of presence of positive family history and 3.5% among population without a family history. Çetin (15) reported a prevalence of 13.6% and 5.9% for the population with and without positive family history respectively. In another study made by Uçku et al. (13), the prevalences were reported as 11.2% and 3.2% in the population with and without a family history, respectively. Our results about this issue are also favorably comparable with published data (17).

In the study, hypertension and obesity which are important risk factors for diabetes mellitus were found to affect the prevalence diabetes mellitus. Among hypertensive subjects the prevalences were 13.4% and 15.7% for diastolic and systolic hypertension, respectively. In the population with body mass index between 25.0 and 29.0 the prevalence was 7.3% and for the population having an index of 30.0 and higher was 8.8%. In a study made by Çetin (15) the prevalence of diabetes mellitus in hypertensive and obese populations were 17.9% and 9.7% respectively. In the literature hypertension and obesity are defined as the major risk factors for diabetes mellitus (20).

Evaluation of marital status showed that diabetes mellitus is more prevalent in divorced than married or single population. This may be due to the older ages of divorced people comparing with married or single subjects.

As a result, the prevalence of diabetes mellitus in adult population in county of Ulas was found to be 5.3% in our study. Age, family history of diabetes mellitus, obesity and hypertension were determined as important risk factors.

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